



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW307D BYPASS RATIO (-): 4.3
 UNIQUE ID NUMBER: 03P15FW193 PRESSURE RATIO π_{c0} (-): 21.4
 COMBUSTOR: TALON II
 ENGINE TYPE: MTF RATED OUTPUT F_{00} (kN): 29.9

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO _{mass} /F ₀₀ (mg/kN)	LTO _{num} /F ₀₀ (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/F ₀₀ AND MAX nvPM _{mass}	922.5	7.91E+15	1250
AS % OF CAEP/10 LIMIT	-	-	9.0
AS % OF CAEP/11 LIMIT (InP)	23.0	33.9	
AS % OF CAEP/11 LIMIT (NT)			

MEASURED DATA

MODE	POWER SETTING (%F ₀₀)	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	0.343	65.4	5.76E+14	
CLIMB OUT	85	2.2	0.283	38.8	6.36E+14	
APPROACH	30	4.0	0.107	5.7	2.34E+14	
IDLE	7	26.0	0.045	246.6	1.88E+15	
LTO TOTAL (kg, mg, number of particles)			148	19852	1.70E+17	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/F ₀₀ VALUES (mg/kN, particles/kN)				663.6	5.69E+15	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				246.6	1.88E+15	971

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (%F ₀₀)	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	83.2	1.78E+15
CLIMB OUT	85	51.2	2.21E+15
APPROACH	30	8.7	1.20E+15
IDLE	7	302.9	5.12E+15

AMBIENT CONDITIONS

	From	To	FUEL	
BAROMETER (kPa)	99.4	100.6	HEAT OF COMBUSTION (MJ/kg)	43.06
TEMPERATURE (K)	288.7	291.3	HYDROGEN CONTENT (%mass)	13.46
HUMIDITY (kg water/kg dry air)	0.0071	0.0099	AROMATICS CONTENT (%vol)	21.6
			NAPHTHALENE CONTENT (%vol)	0.70
			SULPHUR CONTENT (ppm by mass)	41

MANUFACTURER: Pratt & Whitney Canada
 TEST ORGANIZATION: Pratt & Whitney Canada
 TEST LOCATION: Mississauga, Ontario, Canada
 TEST DATES: 30/09/2016-03/10/2016

REMARKS

1. Data revised to correct calculation errors
2. Data acquired using procedures and systems prescribed in Annex 16 Volume II, Amd. 9
3. Thermophoretic correction applied as described in Annex 16 Volume II, Amd. 9, Appendix 7, Section 6.2.1
4. Data corrected for fuel hydrogen content according to CAEP11.WP91 App.A
5. Export Classification: Technical Data: Yes / ECL: NSR / ECCN: N/A / P-ECCN: 9E991
6. Data reported in ER9043 Part II Rev. C